

Amendment

Applicant: Frederick A. Perner et al.
Serial No.: 10/681,483
Filed: October 8, 2003
Docket No.: 10014200-1
Title: MEMORY

REMARKS

Claims 1-12 and 21-33 are pending. By this Amendment, claims 1, 21 and 23 are amended, claims 13-20 are cancelled, and new claims 28-33 are added.

The September 8, 2004 Office Action rejected claims 1-12 and 21-22 under 35 U.S.C. § 102(b) over Gallagher (U.S. Patent No. 5,640,343) and claims 23-27 under 35 U.S.C. § 102(b) over Pohm (U.S. Patent No. 6,147,900). Applicant respectfully traverses these rejections.

Independent Claim 1 and its Dependent Claims

Independent claim 1 recites magnetic memory cells having sides and opposite ends, with conductors filling spaces between adjacent magnetic memory cells as viewed from the sides of the magnetic memory cells. Note e.g. claim 1, lines 2-3 and 6-7. Word lines 1-3 of Gallagher are in a horizontal plane below memory cells 9, and bit lines 4-6 of Gallagher are in another horizontal plane above memory cells 9. Note e.g. Figures 1A-1B and column 3, lines 48-51 of Gallagher. The horizontal planes in which Gallagher's lines are disposed do not fill spaces between memory cells 9 as viewed from the *sides* of magnetic memory cells 9, contrary to what is recited in claim 1. Accordingly, Applicant submits that independent claim 1 defines patentable subject matter.

Attention also is directed to new dependent claim 31, which recites that straight lines extending directly between adjacent magnetic memory cells pass through the dielectric layers recited in claim 11 and through the conductors filling the spaces between the adjacent magnetic memory cells. New dependent claim 30 recites that the top conductors extend between the magnetic memory cells and along the sides of the magnetic memory cells to a

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level of the bottom conductors. New dependent claim 29 recites that the conductors contact the substrate of dependent claim 3 between adjacent magnetic memory cells and that the spaces recited in independent claim 1 are at a same elevation with respect to the substrate as the sides of the adjacent memory cells. New dependent claim 28 recites that the conductors contact opposite ends of the magnetic memory cells and are disposed along the sides of the magnetic memory cells. Gallagher fails to teach or suggest the features recited in these and the other dependent claims.

Independent Claim 21 and its Dependent Claims

Independent claim 21 recites that the means for sensing fills intervening gaps of the means for storing and surrounds the plurality of storage units. Note e.g. claim 21, lines 5-6. Again, Gallagher discloses word lines 1-3 in a horizontal plane and bit lines 4-6 in another horizontal plane. Word and bit lines 1-6 of Gallagher do not surround Gallagher's cells 9. Accordingly, Applicant submits that independent claim 21 defines patentable subject matter. Regarding new dependent claim 32, Gallagher also fails to teach or suggest that the means for sensing surrounds ends and sides of the plurality of storage units in three dimensions.

Independent Claim 23 and its Dependent Claims

Independent claim 23 recites second conductive layers deposited over the insulating layers and the magnetic cells, the second conductive layers contacting second vias of the memory structure. Note e.g. claim 23, last two lines. In Pohm, passing reference is made to via openings through insulating layer 11 and through "appropriate ones of the insulating layers in integrated circuit 10" (column 8, lines 15-18), and to via openings through

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insulating layer 21 and through “silicon nitrite insulating layers 19 and 11 as well as though (sic) appropriate ones of the insulating layers in integrated circuit 10” (column 11, lines 5-9). Pohm does not disclose exactly *where* in the insulating layers or other structures illustrated in e.g. Figure 1B that these vias might be located, and provides no teaching or suggestion that the second conductive layers recited in claim 23 contact second vias of the memory structure as claimed. Attention also is directed to new dependent claim 33, which recites a substrate supporting the magnetic cells, wherein the first vias and the second vias are disposed through the substrate. Accordingly, Applicant submits that independent claim 23 and its dependent claims define patentable subject matter.

Formal Matters

Non-elected claims 13-20 are cancelled without prejudice or disclaimer, and the title of the application is amended to address the objection to the title set forth in the Office Action.

Conclusion

In view of the foregoing, Applicant submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance are requested. The Commissioner is hereby authorized to grant any extensions of time and to charge any fees under 37 C.F.R. § 1.16 and § 1.17 that may be required during the entire pendency of this application, or to credit any overpayment, to Deposit Account No. 08-2025.

The Examiner is invited to telephone the undersigned to advance prosecution.

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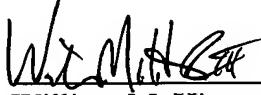
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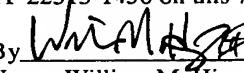
Respectfully submitted,



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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail with sufficient postage, in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 7th day of December, 2004.

By 

Name: William M. Hienz III